NON-PUBLIC?: N
ACCESSION #: 9101290395
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Nine Mile Point Unit 1 PAGE: 1 OF 6

DOCKET NUMBER: 05000220

TITLE: Reactor Scram Due To Spurious Trip Of Neutron Monitor Caused By Noise
EVENT DATE: 12/29/90 LER #: 90-019-00 REPORT DATE: 01/24/91

OTHER FACILITIES INVOLVED: N/A DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 010

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Douglas Helms, General Supervisor TELEPHONE: (315) 349-2802
System Engineering

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: SB COMPONENT: ISV MANUFACTURER: R165
REPORTABLE NPRDS: No

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On December 29, 1990, at 1719 hours, Nine Mile Point Unit 1 (NMP1) experienced a full reactor scram when a trip signal was received on Reactor Protection System (RPS) channel 11 due to a spike on Intermediate Range Monitor (IRM) 12.

At the time of the event the mode switch was in the "startup" position, reactor power was at approximately 10 percent and a RPS trip had been inserted on channel 12 due to the failure of a Main Steam Isolation Valve (MSIV) to meet its surveillance test requirements.

When the scram occurred the unit was conducting a forced shutdown due to the MSIV failure and increased drywell leakage.

The cause of the event was a spike on IRM 12 (RPS channel 11) coincident

with a half-trip inserted on RPS channel 12 due to the MSIV failure.

The corrective action for the IRM spike is the continuation of the neutron monitoring troubleshooting and upgrade efforts.

END OF ABSTRACT

I. DESCRIPTION OF EVENT

On December 29, 1990, at 1719 hours, Nine Mile Point Unit 1 (NMP1) experienced a full reactor scram when a trip signal was received on Reactor Protection System (RPS) channel 11 due to a spike on Intermediate Range Monitor (IRM) 12.

At the time of the event the mode switch was in the "startup" position, reactor power was at approximately 10 percent and an RPS trip had been inserted on channel 12 due to the failure of a Main Steam Isolation Valve (MSIV) to meet its Surveillance Test (ST) requirements.

Following the failure of the MSIV to meet its ST requirements, appropriate Technical Specification actions were taken to place the unit in a stable condition. The required actions resulted in the plant operating at approximately 39 percent power with one of its two main steam lines isolated and therefore RPS channel 12 in a tripped condition.

An evaluation of plant conditions by plant management indicated that the cause of the MSIV failure was inside the drywell. Additional items considered were the above normal drywell leakage and the upcoming surveillance on instrumentation which initiates a half scram which would not be able to be performed in the present condition.

The decision to conduct a forced shutdown was due to degraded conditions and shutdown commenced at approximately 11:00 a.m., December 29, 1990.

At 1719 hours with reactor power at approximately 10 percent, the Turbine Generator off line and electrical loads being supplied from offsite, a trip signal was received on RPS channel 11 due to a spike on IRM 12. This trip signal on RPS channel 11 along with the existing MSIV trip signal on RPS channel 12, resulted in a full reactor scram.

II. CAUSE OF EVENT

The cause of the event was a spike on Neutron Monitoring System IRM 12

(RPS channel 11), coincident with a half-trip inserted on RPS channel 12.

II. CAUSE OF EVENT (cont.)

Nine Mile Point Unit 1 has had a history of problems with the Neutron Monitoring System (NMS). The problem is generally referred to as "spiking", but is interference or grounding induced noise.

The root cause of the MSIV failure to pass its surveillance test was misalignment of the valve poppet in its sleeve. This misalignment caused the poppet to jam in the valve body which led to the valve's limitorque motor failing.

The major contributor to the increased drywell leakage was a packing leak on Shutdown Cooling Isolation Valve 38-13. Several other minor packing leaks were identified as contributing to the leakage as well.

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73 (a)(2)(iv), "Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)".

There were no safety consequences as a result of this event since reactor power was on IRM ranges 6/7. All control rods went to position 00 and minimal thermal hydraulic transient resulted. The only system action experienced during this event was an operation of the RPS reactor trip.

The SRM and IRM rod block and scram functions are utilized for reactor protection during startup, shutdown, and low power operation. These trips are bypassed under power generating conditions when the mode switch is in "RUN". Therefore, an event of the type discussed in this LER would not occur during full power operation. During startup and low power operation, however, a spurious high neutron flux trip signal on both channels of IRMs would be required to scram the plant. However, since this would be a low power event, all steam could be bypassed to the condenser.

IV. CORRECTIVE ACTIONS (cont.)

Immediate operator corrective action involved resetting the scram, and initiating an investigation into the cause of the scram per NMP1 procedure N1-RAP-6, "Post Reactor Scram Analysis and Evaluation".

Niagara Mohawk is actively processing corrective actions concerning the neut
on monitoring signal path "spiking". Actions taken prior to this event in an attempt to eliminate the noise problem included:

1. The addition of ground straps from each SRM/IRM chassis to panel ground.

2. The upgrade of each SRM/IRM chassis with Electro-Magnetic Interference (EMI) bypass capacitors on the output wiring from the chassis at the output connectors.

3. Walkdowns, troubleshooting and inspections to identify other potential sources of noise for future actions.

Future corrective actions will result from modification requests generated during Corrective Action 3 above and entered into the Integrated Priority System (IPS). Modifications being prioritized include:

1. Isolation of the instrument pre-amps from station ground via electrical standoffs.

2. Separation of the instrument panel ground bus from the remaining sections in the control room.

3. Addition of APRM setdown upscale scram and rod block with the mode switch in startup.

4. Replacement of or supplement to existing SRM/IRM neutron monitoring equipment with qualified wide-range neutron monitoring equipment.

5&6. Both address the SRM/IRM cable replacement/mode of routing inside the containment.

IV. CORRECTIVE ACTIONS (cont.)

The corrective action for the failed MSIV included disassembly,

inspection and repair. The poppet sleeve and limitorque motor were replaced.

Prior to restart, a root cause evaluation was conducted to determine potential effects on other components of identical design. It was determined that it was highly unlikely that MSIV 01-01 would fail in the same manner, due to several years of correct operation. Had the misalignment been present, MSIV 01-01's functional life would have been very short.

The corrective action for the increased drywell leakage was the adjustment of the packing on Shutdown Cooling Isolation Valve 38-13. During the forced outage, several other minor packing leaks identified as contributing to the drywell leakage were also adjusted or repacked.

V. ADDITIONAL INFORMATION

A. Failed components: Main Steam Isolation Valve 01-02 Limitorque Motor

B. Previous similar events:

LER 87-25 Reactor scram due to spurious trip of neutron monitor caused by noise (cold shutdown).

LER 87-16 Reactor scram, turbine trip, high pressure coolant injection mode of feedwater signals due to spurious trip of neutron monitor caused by noise (cold shutdown).

LER 87-15 Same as 87-16.

LER 86-21 Reactor scram and HPCI mode of feedwater initiation due to IRM spike.

LER 84-05 Scram resulting from spurious IRM trips on different channels of RPS.

V. ADDITIONAL INFORMATION (cont.)

The corrective actions of previous events resulted in the generation of a Problem Report. In July 1988 in response to the Problem Report, Niagara Mohawk contracted General Electric Design Engineering to investigate Unit 1's IRM noise problems. The corrective actions cited in this LER resulted from that investigation and ongoing

internal efforts.

C. Identification of components referred to in this LER:

IEEE 803 IEEE 805
COMPONENT FUNCTION SYSTEM
Reactor Protection System N/A JC
Main Steam Isolation Valve ISV SB
Intermediate Range Monitor JI IG
Drywell N/A NH
Turbine Generator TRB TA

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NIAGARA
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NMP77313

January 24, 1991

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Docket No. 50-220
LER 90-19

Gentlemen:

In accordance with 10CFR50.73, we hereby submit the following Licensee Event Report.

LER 90-19 Which is being submitted in accordance with 10CFR50.73 (a)(2)(iv), "Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS). However, actuation of an ESF, including the RPS, that resulted from and was part of the preplanned sequence during testing or reactor operation need not be reported".

A 10CFR50.72 report was made at 1748 hours on December 29, 1990.

This report was completed in the format designated in NUREG-1022,

Supplement 2, dated September 1985.

Very truly yours,

Joseph F. Firlit
Vice President - Nuclear Generation

JFF/DPS/lmc

ATTACHMENT

xc: Thomas T. Martin, Regional Administrator, Region I
William A. Cook, Sr. Resident Inspector

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